Appendix A

List of Publications

Journal Papers

1. **Sandeep Kumar gautam**, Vinayak Srivastava, Sandeep S. Udmale, Amit Kumar Singh, and Sanjay Kumar Singh. "Modern Machine Learning Solution for Electricity Consumption Management in Smart Buildings." *IEEE Engineering Management Review* (2024). (Published) **(SCI/SCIE, IF: 2.08)**

2. **Gautam, Sandeep Kumar**, Vinayak Srivastava, and Sandeep S. Udmale. "Enhanced Electricity Forecasting for Smart Buildings Using a TCN-Bi-LSTM Deep Learning Model." *Expert Systems* 42.3 (2025): e70000. (Published) **(SCI/SCIE, IF: 3.3)**

Bibliography

[1] L. Hernandez, C. Baladron, J. M. Aguiar, B. Carro, A. J. Sanchez-Esguevillas, J. Lloret, and J. Massana, "A survey on electric power demand forecasting: future trends in smart grids, microgrids and smart buildings," *IEEE Communications Surveys & Tutorials*, 2014, v. 16, n. 3, pp. 1460–1495.

[2] M. K. Kim, Y.-S. Kim, and J. Srebric, "Impact of correlation of plug load data, occupancy rates and local weather conditions on electricity consumption in a building using four back-propagation neural network models," *Sustainable Cities and Society*, 2020, v. 62, p. 102321.

[3] V. A. Memos, K. E. Psannis, Y. Ishibashi, B.-G. Kim, and B. B. Gupta, "An efficient algorithm for media-based surveillance system (eamsus) in iot smart city framework," *Future Generation Computer Systems*, 2018, v. 83, pp. 619–628.

[4] M. Malik, C. Prabha, P. Soni, V. Arya, W. A. Alhalabi, B. B. Gupta, A. A. Albeshri, and A. Almomani, "Machine learning-based automatic litter detection and classification using neural networks in smart cities," *International Journal on Semantic Web and Information Systems (IJSWIS)*, 2023, v. 19, n. 1, pp. 1–20.

[5] C. Lu, S. Li, and Z. Lu, "Building energy prediction using artificial neural networks: A literature survey," *Energy and Buildings*, 2022, v. 262, p. 111718.

[6] A. P. Plageras, K. E. Psannis, C. Stergiou, H. Wang, and B. B. Gupta, "Efficient iot-based sensor big data collection–processing and analysis in smart buildings," *Future Generation Computer Systems*, 2018, v. 82, pp. 349–357.

[7] A. Mahdavi, C. Berger, F. Tahmasebi, and M. Schuss, "Monitored data on occupants' presence and actions in an office building," *Scientific data*, 2019, v. 6, n. 1, pp. 1–5.

[8] R. Jamil, "Hydroelectricity consumption forecast for pakistan using arima modeling and supply-demand analysis for the year 2030," *Renewable Energy*, 2020, v. 154, pp. 1–10.

[9] A. Blazquez-Garcia, A. Conde, A. Milo, R. Sanchez, and I. Barrio, "Short-term office building elevator energy consumption forecast using sarima," *Journal of Building Performance Simulation*, 2020, v. 13, n. 1, pp. 69–78.

[10] F. Zhang, C. Deb, S. E. Lee, J. Yang, and K. W. Shah, "Time series forecasting for building energy consumption using weighted support vector regression with differential evolution optimization technique," *Energy and Buildings*, 2016, v. 126, pp. 94–103.

[11] Y. Chen, P. Xu, Y. Chu, W. Li, Y. Wu, L. Ni, Y. Bao, and K. Wang, "Short-term electrical load forecasting using the support vector regression (svr) model to calculate the demand response baseline for office buildings," *Applied Energy*, 2017, v. 195, pp. 659–670.

[12] Z. Li, D. Friedrich, and G. P. Harrison, "Demand forecasting for a mixed-use building using agent-schedule information with a data-driven model," *Energies*, 2020, v. 13, n. 4, p. 780.

[13] K. P. Amber, M. W. Aslam, A. Mahmood, A. Kousar, M. Y. Younis, B. Akbar, G. Q. Chaudhary, and S. K. Hussain, "Energy consumption forecasting for university sector buildings," *Energies*, 2017, v. 10, n. 10, p. 1579.

[14] A. S. Jihad and M. Tahiri, "Forecasting the heating and cooling load of residential buildings by using a learning algorithm "gradient descent", morocco," *Case studies in thermal engineering*, 2018, v. 12, pp. 85–93.

[15] D. S. Kim, S.-Y. Son, and J. Lee, "Developments of the in-home display systems for residential energy monitoring," *IEEE Transactions on Consumer Electronics*, 2013, v. 59, n. 3, pp. 492–498.

[16] R. A. Jose, C. Ramesh, R. S. Krishnan, C. Gayathri, G. Yamini, and A. Srinivasan, "Emanet: Revolutionizing energy efficiency in smart spaces through machine learning," in *2024 8th International Conference on Inventive Systems and Control (ICISC)*. IEEE, 2024, pp. 409–415.

[17] B. S. Alotaibi, M. A. Abuhussain, Y. A. Dodo, N. Al-Tamimi, A. Maghrabi, H. Ojobo, A. U. Naibi, and N. E. Benti, "A novel approach to estimate building electric power consumption based on machine learning method: toward net-zero energy, low carbon and smart buildings," *International Journal of Low-Carbon Technologies*, 2024, v. 19, pp. 2335–2345.

[18] M. Khalil, M. Esseghir, and L. Merghem-Boulahia, "Federated learning for energy-efficient thermal comfort control service in smart buildings," in *2021 IEEE Global Communications Conference (GLOBECOM)*. IEEE, 2021, pp. 01–06.

[19] S. Siami-Namini, N. Tavakoli, and A. S. Namin, "The performance of lstm and bilstm in forecasting time series," in *2019 IEEE International Conference on Big Data (Big Data)*. IEEE, 2019, pp. 3285–3292.

[20] B. C. Mateus, M. Mendes, J. T. Farinha, R. Assis, and A. M. Cardoso, "Comparing lstm and gru models to predict the condition of a pulp paper press," *Energies*, 2021, v. 14, n. 21, p. 6958.

[21] C. Nichiforov, G. Stamatescu, I. Stamatescu, and I. Făgărăşan, "Evaluation of sequence-learning models for large-commercial-building load forecasting," *Information*, 2019, v. 10, n. 6, p. 189.

[22] I. A. Dahlan, D. Ariateja, F. Hamami *et al.*, "The implementation of building intelligent smart energy using lstm neural network," in *2021 International Conference on Artificial Intelligence and Mechatronics Systems (AIMS)*. IEEE, 2021, pp. 1–5.

[23] K. Gunawardhana, W. Lakshitha, U. Perera, S. Kumarawadu, and V. Logeeshan, "Deep learning-based power baseline modelling of a range of electrical loads in smart green building," in *2024 Moratuwa Engineering Research Conference (MERCon)*. IEEE, 2024, pp. 554–559.

[24] M. Y. Erten and N. İnanç, "Forecasting electricity consumption for accurate energy management in commercial buildings with deep learning models to facilitate demand response programs," *Electric Power Components and Systems*, 2024, v. 52, n. 9, pp. 1636–1651.

[25] F. Ibude, A. Otebolaku, J. E. Ameh, and A. Ikpehai, "Multi-timescale energy consumption management in smart buildings using hybrid deep artificial neural networks," *Journal of Low Power Electronics and Applications*, 2024, v. 14, n. 4, p. 54.

[26] D. Lee, "Low-cost and simple short-term load forecasting for energy management systems in small and middle-sized office buildings," *Energy Exploration & Exploitation*, 2021, v. 39, n. 2, pp. 637–656.

[27] S. Liu, W. Bai, G. Liu, W. Li, and H. Srivastava, "Parallel fractal compression method for big video data," *Complexity*, 10 2018, v. 2018, pp. 1–16.

[28] F. Dinmohammadi, Y. Han, and M. Shafiee, "Predicting energy consumption in residential buildings using advanced machine learning algorithms," *Energies*, 2023, v. 16, n. 9. [Online]. Available: https://www.mdpi.com/1996-1073/16/9/3748

[29] "A scaling law for short term load forecasting on varying levels of aggregation," *International Journal of Electrical Power Energy Systems*, 2018, v. 98, pp. 350–361. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0142061517306956

[30] F. L. Quilumba, W.-J. Lee, H. Huang, D. Y. Wang, and R. L. Szabados, "Using smart meter data to improve the accuracy of intraday load forecasting considering customer behavior similarities," *IEEE Transactions on Smart Grid*, 2014, v. 6, n. 2, pp. 911–918.

[31] Y. Wang, Q. Chen, M. Sun, C. Kang, and Q. Xia, "An ensemble forecasting method for the aggregated load with subprofiles," *IEEE Transactions on Smart Grid*, 2018, v. 9, n. 4, pp. 3906–3908.

[32] G. Biau, "Analysis of a random forests model," *The Journal of Machine Learning Research*, 2012, v. 13, pp. 1063–1095.

[33] Y.-S. Kim and J. Srebric, "Impact of occupancy rates on the building electricity consumption in commercial buildings," *Energy and Buildings*, 2017, v. 138, pp. 591–600.

[34] A. Mahdavi, F. Tahmasebi, and M. Kayalar, "Prediction of plug loads in office buildings: Simplified and probabilistic methods," *Energy and Buildings*, 2016, v. 129, pp. 322–329.

[35] N. Amjady, "Short-term hourly load forecasting using time-series modeling with peak load estimation capability," *IEEE Transactions on power systems*, 2001, v. 16, n. 3, pp. 498–505.

[36] M. Espinoza, C. Joye, R. Belmans, and B. De Moor, "Short-term load forecasting, profile identification, and customer segmentation: a methodology based on periodic time series," *IEEE Transactions on Power Systems*, 2005, v. 20, n. 3, pp. 1622–1630.

[37] Y. Ding, Q. Wang, Z. Wang, S. Han, and N. Zhu, "An occupancy-based model for building electricity consumption prediction: A case study of three campus buildings in tianjin," *Energy and Buildings*, 2019, v. 202, p. 109412.

[38] F. Haldi and D. Robinson, "Interactions with window openings by office occupants," *Building and environment*, 2009, v. 44, n. 12, pp. 2378–2395.

[39] G. Y. Yun, H. Kim, and J. T. Kim, "Thermal and non-thermal stimuli for the use of windows in offices," *Indoor and Built Environment*, 2012, v. 21, n. 1, pp. 109–121.

[40] P. Anand, D. Cheong, C. Sekhar, M. Santamouris, and S. Kondepudi, "Energy saving estimation for plug and lighting load using occupancy analysis," *Renewable Energy*, 2019, v. 143, pp. 1143–1161.

[41] M. Zuraimi, A. Pantazaras, K. Chaturvedi, J. Yang, K. Tham, and S. Lee, "Predicting occupancy counts using physical and statistical co2-based modeling methodologies," *Building and Environment*, 2017, v. 123, pp. 517–528.

[42] M. M. Ouf, M. H. Issa, A. Azzouz, and A.-M. Sadick, "Effectiveness of using wifi technologies to detect and predict building occupancy," *Sustainable buildings*, 2017, v. 2, p. 7.

[43] A. Alzahrani, "Short-term solar irradiance prediction based on adaptive extreme learning machine and weather data," *Sensors*, 2022, v. 22, n. 21, p. 8218.

[44] T. Ahmad, H. Chen, R. Huang, G. Yabin, J. Wang, J. Shair, H. M. A. Akram, S. A. H. Mohsan, and M. Kazim, "Supervised based machine learning models for short, medium and long-term energy prediction in distinct building environment," *Energy*, 2018, v. 158, pp. 17–32.

[45] P. Krishnan, A. Prabu, S. Loganathan, S. Routray, U. Ghosh, and M. AL-Numay, "Analyzing and managing various energy-related environmental factors for providing personalized iot services for smart buildings in smart environment," *Sustainability*, 2023, v. 15, n. 8, p. 6548.

[46] Z. Wang, Y. Wang, and R. S. Srinivasan, "A novel ensemble learning approach to support building energy use prediction," *Energy and Buildings*, 2018, v. 159, pp. 109–122. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0378778817335272

[47] L. Peng, S. Liu, R. Liu, and L. Wang, "Effective long short-term memory with differential evolution algorithm for electricity price prediction," *Energy*, 2018, v. 162, pp. 1301–1314. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0360544218308727

[48] R. Markovic, E. Azar, M. K. Annaqeeb, J. Frisch, and C. van Treeck, "Day-ahead prediction of plug-in loads using a long short-term memory neural network," *Energy and Buildings*, 2021, v. 234, p. 110667.

[49] P. Anand, C. Deb, K. Yan, J. Yang, D. Cheong, and C. Sekhar, "Occupancy-based energy consumption modelling using machine learning algorithms for institutional buildings," *Energy and Buildings*, 2021, v. 252, p. 111478.

[50] N. G. Paterakis, E. Mocanu, M. Gibescu, B. Stappers, and W. van Alst, "Deep learning versus traditional machine learning methods for aggregated energy demand prediction," in *2017 IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT-Europe)*, 2017, pp. 1–6.

[51] H. Tang, X. Cui, J. Zhu, L. Shen, J. Cai, and B. Zhu, "A bayesian-optimized hybrid neural network based on cnn and bilstm for predictive maintenance of diesel generator," in *2023 Prognostics and Health Management Conference (PHM)*, 2023, pp. 17–22.

[52] C. Feng, A. Mehmani, and J. Zhang, "Deep learning-based real-time building occupancy detection using ami data," *IEEE Transactions on Smart Grid*, 2020, v. 11, n. 5, pp. 4490–4501.

[53] S. D. Atalay, G. Calis, G. Kus, and M. Kuru, "Performance analyses of statistical approaches for modeling electricity consumption of a commercial building in france," *Energy and Buildings*, 2019, v. 195, pp. 82–92.

[54] Z. Tan, G. De, M. Li, H. Lin, S. Yang, L. Huang, and Q. Tan, "Combined electricity-heat-cooling-gas load forecasting model for integrated energy system based on multi-task learning and least square support vector machine," *Journal of cleaner production*, 2020, v. 248, p. 119252.

[55] D. Kim, Y. Yoon, J. Lee, P. J. Mago, K. Lee, and H. Cho, "Design and implementation of smart buildings: A review of current research trend," *Energies*, 2022, v. 15, n. 12, p. 4278.

[56] T. Han, K. Muhammad, T. Hussain, J. Lloret, and S. W. Baik, "An efficient deep learning framework for intelligent energy management in iot networks," *IEEE Internet of Things Journal*, 2020, v. 8, n. 5, pp. 3170–3179.

[57] I. Sülo, S. R. Keskin, G. Dogan, and T. Brown, "Energy efficient smart buildings: Lstm neural networks for time series prediction," in *2019 International conference on deep learning and machine learning in emerging applications (Deep-ML)*. IEEE, 2019, pp. 18–22.

[58] N. Mughees, S. A. Mohsin, A. Mughees, and A. Mughees, "Deep sequence to sequence bi-lstm neural networks for day-ahead peak load forecasting," *Expert Systems with Applications*, 2021, v. 175, p. 114844.

[59] M. Kazerani and K. Tehrani, "Grid of hybrid ac/dc microgrids: A new paradigm for smart city of tomorrow," in *2020 IEEE 15th International Conference of System of Systems Engineering (SoSE)*. IEEE, 2020, pp. 175–180.

[60] Y. Chen, Y. Kang, Y. Chen, and Z. Wang, "Probabilistic forecasting with temporal convolutional neural network," *Neurocomputing*, 2020, v. 399, pp. 491–501.

[61] N. Mughees, S. A. Mohsin, A. Mughees, and A. Mughees, "Deep sequence to sequence bi-lstm neural networks for day-ahead peak load forecasting," *Expert Systems with Applications*, 2021, v. 175, p. 114844.

[62] M. Xia, H. Shao, X. Ma, and C. W. De Silva, "A stacked gru-rnn-based approach for predicting renewable energy and electricity load for smart grid operation," *IEEE Transactions on Industrial Informatics*, 2021, v. 17, n. 10, pp. 7050–7059.

[63] M. Sajjad, Z. A. Khan, A. Ullah, T. Hussain, W. Ullah, M. Y. Lee, and S. W. Baik, "A novel cnn-gru-based hybrid approach for short-term residential load forecasting," *Ieee Access*, 2020, v. 8, pp. 143 759–143 768.

[64] K. Ke, S. Hongbin, Z. Chengkang, and C. Brown, "Short-term electrical load forecasting method based on stacked auto-encoding and gru neural network," *Evolutionary Intelligence*, 2019, v. 12, pp. 385–394.

[65] B. Jena, S. Saxena, G. K. Nayak, L. Saba, N. Sharma, and J. S. Suri, "Artificial intelligence-based hybrid deep learning models for image classification: The first narrative review," *Computers in Biology and Medicine*, 2021, v. 137, p. 104803.

[66] J. Shah, D. Vaidya, and M. Shah, "A comprehensive review on multiple hybrid deep learning approaches for stock prediction," *Intelligent Systems with Applications*, 2022, v. 16, p. 200111.

[67] A. De Paola, M. Ortolani, G. Lo Re, G. Anastasi, and S. K. Das, "Intelligent management systems for energy efficiency in buildings: A survey," *ACM Computing Surveys (CSUR)*, 2014, v. 47, n. 1, pp. 1–38.

[68] H. IEA and C. Change, "International energy agency (iea)," 2022.

[69] O. Jogunola, C. Morley, I. J. Akpan, Y. Tsado, B. Adebisi, and L. Yao, "Energy consumption in commercial buildings in a post-covid-19 world," *IEEE Engineering Management Review*, 2022, v. 50, n. 1, pp. 54–64.

[70] A. A. Al-Shargabi, A. Almhafdy, D. M. Ibrahim, M. Alghieth, and F. Chiclana, "Buildings' energy consumption prediction models based on buildings' characteristics: Research trends, taxonomy, and performance measures," *Journal of Building Engineering*, 2022, v. 54, p. 104577.

[71] Y. L. Cheng, M. H. Lim, and K. H. Hui, "Impact of internet of things paradigm towards energy consumption prediction: A systematic literature review," *Sustainable Cities and Society*, 2022, v. 78, p. 103624.

[72] Q. Qiao, A. Yunusa-Kaltungo, and R. E. Edwards, "Towards developing a systematic knowledge trend for building energy consumption prediction," *Journal of Building Engineering*, 2021, v. 35, p. 101967.

[73] K. Amasyali and N. M. El-Gohary, "A review of data-driven building energy consumption prediction studies," *Renewable and Sustainable Energy Reviews*, 2018, v. 81, pp. 1192–1205.

[74] J. Torres, F. Martínez-Álvarez, and A. Troncoso, "A deep lstm network for the spanish electricity consumption forecasting," *Neural Computing and Applications*, 2022, v. 34, n. 13, pp. 10 533–10 545.

[75] A. Almalaq and J. J. Zhang, "Evolutionary deep learning-based energy consumption prediction for buildings," *IEEE Access*, 2019, v. 7, pp. 1520–1531.

[76] C. Tian, C. Li, G. Zhang, and Y. Lv, "Data driven parallel prediction of building energy consumption using generative adversarial nets," *Energy and Buildings*, 2019, v. 186, pp. 230–243.

[77] N. Luo, Z. Wang, D. Blum, C. Weyandt, N. Bourassa, M. A. Piette, and T. Hong, "A three-year dataset supporting research on building energy management and occupancy analytics," *Scientific Data*, 2022, v. 9, n. 1, p. 156.

[78] A. A. Al-Shargabi, A. Almhafdy, D. M. Ibrahim, M. Alghieth, and F. Chiclana, "Buildings' energy consumption prediction models based on buildings' characteristics: Research trends, taxonomy, and performance measures," *Journal of Building Engineering*, 2022, v. 54, p. 104577.

[79] M. T. Ribeiro, S. Singh, and C. Guestrin, "" why should i trust you?" explaining the predictions of any classifier," in *Proceedings of the 22nd ACM SIGKDD international conference on knowledge discovery and data mining*, 2016, pp. 1135–1144.

[80] S. Bai, J. Z. Kolter, and V. Koltun, "An empirical evaluation of generic convolutional and recurrent networks for sequence modeling," *arXiv preprint arXiv:1803.01271*, 2018.

[81] C. Zhang, S. Bengio, M. Hardt, B. Recht, and O. Vinyals, "Understanding deep learning (still) requires rethinking generalization," *Communications of the ACM*, 2021, v. 64, n. 3, pp. 107–115.

[82] A. Vaswani, N. Shazeer, N. Parmar, J. Uszkoreit, L. Jones, A. N. Gomez, Ł. Kaiser, and I. Polosukhin, "Attention is all you need," *Advances in neural information processing systems*, 2017, v. 30.

[83] H. Li, Z. Cai, J. Wang, J. Tang, W. Ding, C.-T. Lin, and Y. Shi, "Fedtp: Federated learning by transformer personalization," *IEEE transactions on neural networks and learning systems*, 2023, v. 35, n. 10, pp. 13 426–13 440.

[84] E. Mocanu, D. C. Mocanu, P. H. Nguyen, A. Liotta, M. E. Webber, M. Gibescu, and J. G. Slootweg, "On-line building energy optimization using deep reinforcement learning," *IEEE transactions on smart grid*, 2018, v. 10, n. 4, pp. 3698–3708.